HW6: Dinning philosophers problem

There are *n* philosophers sitting at a round table. We want to design a scheduler with the following input and output variables:

Input variables $h_i \rightarrow$ "philosopher *i* is hungry".

Output variables $e_i \rightarrow$ "philosopher *i* is eating".

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Guarantee 1: An eating philosopher prevents her neighbours from eating.

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where $j := i + 1 \pmod{n}$, $k := i - 1 \pmod{n}$

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SCOS
Systematic Construction of Correct Systems

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This is a **safety** property as well.

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This is stronger than previous property. In particular, it implies that if e_i, eventually $\neg h_i$.

This is neither a **safety** nor a **liveness** property.

Guarantee 3: Every hungry philosopher eats eventually.

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This is a **liveness** property.

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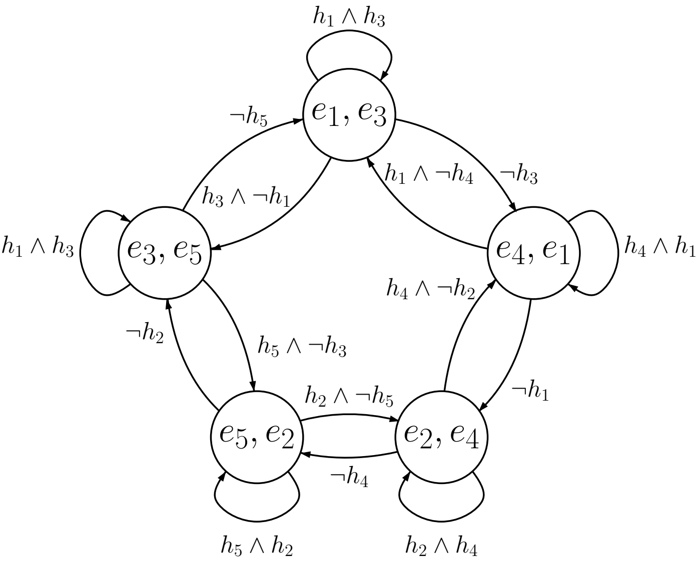
This is a **liveness** property as well.

Design a system as Moore machine or Mealy machine for 5 dining philosophers that is

Correct, i.e., it satisfies the specification,

and **Robust,** in the sense that if one philosopher is hungry forever, she eats forever and the only two other philosophers starve.


$h_1 \wedge h_3$
e_1, e_3
$\neg h_5$
$h_1 \wedge \neg h_4$
$\neg h_3$
$h_3 \wedge \neg h_1$
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e_3, e_5
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